TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

IMPROVED VACUUM RECOVERY SYSTEMS FOR BUILDINGS 324 AND 327

Identification No.: RL-DD078
Date: November 2001

Program: 300 Area Facility Transition
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-RC06
Waste Stream: Radioactive dispersibles on or within hot cell construction materials, ducting, tanks, vault floors etc.
TSD Title: N/A
Operable Unit (if applicable): N/A
Waste Management Unit (if applicable): N/A
Facility: Buildings 324 and 327

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" Priority:

_X_ 1. Critical to the success of the ACPC
____ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Improved Vacuum Recovery Systems for Buildings 324 and 327

Need/Opportunity Category: *Technical Opportunity* – The Site desires an alternative to the current baseline technology.

Need Description: Vacuum recovery systems will be needed to collect dry and wet solids during the course of cleaning several areas in the 324 Building. These areas include the floors of B cell, D cell, high-level vault, SMF, and the hot pipe trench. Vacuum systems may also be needed during size reduction of the HLW and LLW vault tanks. It is also probable that the B cell exhaust duct inventory will be transferred back to B cell with a vacuum system. Radiation fields vary significantly as does working space. In most cases, the change-out of the vacuum filters will be remotely performed using master-slave manipulators (MSMs). The need for similar application exists for 327 facility hot cells and supporting area, however the decontamination and recovery systems will be predominately dry.

Schedule Requirements:

Earliest Date Required: (01/01/01)
Latest Date Required: (09/30/07)

Problem Description: Several zones in SMF, 324 hot cells, and the 327 Facility will require the collection of dry solids and combined water and solids. Contaminated debris will be generated from media blast cleaning, HP and UHP water cleaning and possibly dry scrubbing equipment.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation: TBD -- No savings can be noted at this time. Decontamination and waste recovery methods will be assessed in FY 2001-FY 2002.

Benefit to the Project Baseline of Filling Need: Vacuum recovery system will help to minimize airborne dispersible material and provide rapid capture of particulates, thus reducing risk to workers. Such systems are also expected to be much more efficient than mechanical removal systems, thus potentially reducing task schedules.

Relevant PBS Milestones:

TRP-06-921	324 Deactivation Complete	September 22, 2006
TRP-07-930	327 Deactivation Complete	September 7, 2007

Functional Performance Requirements: A variety of vacuum recovery systems are needed for removal of potentially dispersible, radioactive debris and particulates from within hot cells, ducting, tanks, vaults and pipe trenches. Modular units must be designed for easy installation, assembly, electrical connection, and filter/canister change-out using master-slave manipulators and/or other remote handling. Most vacuum systems will be needed for collection of dry materials; wet systems will also be need on a less frequent basis. Collection canisters should be designed for direct disposal within, or integral with, standard waste burial containers.

Work Breakdown Structure (WBS) No.: 1.04.10, 324/327 Buildings Stabilization/Deactivation

TIP No.: N/A

Justification For Need:

Technical: All decontamination work will generate radioactive waste materials that will require a collection. Vacuum collection is favored over simple mechanical systems in order to minimize dispersing radionuclide material during collection and transfer. The final waste form will likely be transferred to a drying unit prior to packaging the dry solids. A vacuum transfer of the dry solids to the final waste disposal package is desired. High activity dispersible material will likely be placed in 10-inch diameter pipe containers

Regulatory: Tri-Party Agreement Milestone M-89-00: Complete Closure of the Non-permitted MW Units of the 324 REC, HLV and LLV by October 2005. The 327 Building contains no TSD units; only the generating facility requirements of RCRA apply.
Environmental Safety and Health: Radioactive contamination presents safety/exposure concerns.

Cultural/Stakeholder Concerns: Stakeholders are concerned about potential releases to the environment. The 324 and 327 Buildings are located within 1,000 ft of the Columbia River.

Other: None identified.

Current Baseline Technology: Mechanical scraping, scooping, clamshell, sweeping and some limited vacuum systems.

End-User: EM-40

Contractor Facility/Project Managers: Malcolm S. Wright, Director - 324 Facility Deactivation Project, Fluor Hanford (FH) (509) 373-5864, Fax: (509) 373-0139, Malcolm_S_(Mal)_Wright@rl.gov; William A. Hoober, Director - 327 Facility Deactivation Project, Fluor Hanford (FH), (509) 376-9717, Fax: (509) 376-5420, William_A_Hoober@rl.gov

Site Technical Point-of-Contact: Gregory T. Berlin, Fluor Hanford (FH), (509) 376-2389, Fax (509) 376-1045, Gregory_T_Berlin@rl.gov.

DOE End-User/Representative Point-of-Contact: David T. Evans, U.S. Department of Energy, Richland Operations Office (DOE-RL), (509) 373-9278, Fax: (509) 372-3508, David_T_Evans@rl.gov.